

9

THE INTEREST OF THE COMMUNITY IN CANCER

Read before the New York Academy of Medicine, in Association with the American Society for the Control of Cancer, May 18, 1916

BY
LOUIS I. DUBLIN, PH.D., Statistician
Metropolitan Life Insurance Company, New York
1916



Digitized by the Internet Archive
in 2015

The Interest of the Community in Cancer*

LOUIS I. DUBLIN, PH.D.

Statistician, Metropolitan Life Insurance Company

NEW YORK

The interest of the community in cancer can best be characterized, perhaps, by contrasting this disease with another that is still more familiar, namely, tuberculosis. The average age at death from tuberculosis is about 37 years; from cancer it is about twenty years greater. Tuberculosis affects primarily the economic interest of the community. The decedent is usually at the highest point of his efficiency; his productive period is still largely in the future; his children are either very young or still unborn. In cancer, on the other hand, the productive period is for the most part in the past; the children have been born, and the family unit is only slightly disturbed economically by the death, since in the majority of cases the offspring have reached the age of self-support and independence. It is, therefore, the emotional interest that is uppermost. The long suffering of the patient, and the utter hopelessness of the condition in its advanced stages, appeal tremendously to the humanitarian feeling of the community. The economic interest in cancer, although important, must remain secondary.

Our interest is accelerated by the mystery that still surrounds the disease. The prevalence of cancer has been noted in the earliest history of civilized man. Today it is responsible for one death out of every fourteen among men, and for one death out of every nine

* Read before the New York Academy of Medicine, in association with the American Society for the Control of Cancer, May 18, 1916.

among women, after the age of 50. Yet, in spite of the wealth of clinical material and the concentration of effort, it has withstood every attempt of the physician and scientist to unravel its secret. The world is still baffled as to the cause of cancer. Only a beginning has been made in its study; the heart of the problem is still sealed to us. The scientific spirit of present-day medicine demands an explanation, and the community as a whole supports this demand insistently and wholeheartedly.

Additional interest results from the disquieting fact that the cancer rate may be increasing. The chief sources of information on their face indicate an increase. This holds true not only for the Registration Area of the United States and for those of our states whose records are most reliable, but also for the United Kingdom, for Switzerland, for Germany and, indeed, generally throughout the civilized world. I shall not go into the complex statistical problem involved in determining whether this increase is real or only apparent. Equally good authorities have divided on this important question. My own judgment is that there may very well be an increase. I am struck, however, with the number of possibilities of serious error in using figures which are usually quoted to prove an increase, especially in our own country. The figures are too striking to be true. In the ten-year period from 1901 to 1910, there was an increase of 30 per cent. in the male cancer rate, and of 22 per cent. in the female cancer rate, at all ages beginning with the age of 25, in the states included in the Registration Area in 1900. At certain age periods this increase was very considerable—as much as 40 per cent. The unreliability of these figures is at once apparent when we think of cancer as a disease of long standing in our civilization. By projecting such increases in the rates forward or backward a few generations, we are led at once to an absurdity; for if cancer were capable of increasing at such a pace it would either have been a negligible disease in the recent past or would seriously threaten the very existence of the race in the near future.

We must consider, in seeking for an explanation of the increasing rates, first, the marked improvement of registration in general in our country during the last fifteen years, and second, the greater certainty in the diagnosis of cancer by physicians, which has resulted from the increase in the number of operations and laboratory examinations. We shall have to wait at least ten years under present conditions of registration in our country to know definitely what has happened. There are already indications that the cancer rate has reached its highest point, and that in certain communities it is beginning to decline.

But whether or not cancer is on the increase is really secondary to the much more important fact that the rate at present is extremely high. The condition today is a real menace. In order that we may determine the extent of the problem that is before us, it is necessary to refer to a few basic figures. The accompanying tables are constructed from the experience of the Industrial Department of the Metropolitan Life Insurance Company. They are valuable because of their intrinsic accuracy, a quality which most cancer rates, unfortunately, do not possess. The figures have also the merit of being based on a large exposure. In the Metropolitan experience there are represented over 10,000,000 persons, both white and colored—men, women and children of all ages above 1. The number of persons exposed and the corresponding number of deaths are known with a high degree of accuracy. The rates have furthermore the particular value of applying to the working classes of the United States and Canada.

The first column in Table 1 shows the death rates from cancer for all persons, without distinction of sex or color. The rate at all ages is 69.7 per hundred thousand exposed. This rate is based on a total of 23,660 cancer deaths which occurred in the four years 1911 to 1914. In the remaining columns, rates for white and for colored persons of each sex are given.

Without devoting attention to the numerous interesting aspects of this table, I may nevertheless point out a

few striking derivations. First, the cancer rate is much higher among females than among males. Second, the rate begins to be significant only with the decade from 25 to 34. Third, the rates are lower for colored than for white persons; however, this applies much more to males than to females. At ages 25 to 34 the rate per hundred thousand for white males is 8.2, and thereafter it increases very rapidly, reaching its maximum, 815.2, at ages 75 and over. White females have a rate of 19.0 at ages 25 to 34—more than twice as much as the corresponding figure for males. As the curve rises there is a tendency for the differences between the sexes to become less, so that in the last age class the

TABLE 1.—DEATH RATES FROM CANCER (ALL FORMS) PER HUNDRED THOUSAND EXPOSED, CLASSIFIED BY COLOR, SEX AND AGE PERIOD *

Age Period	All Persons	White Males	White Females	Colored Males	Colored Females
All ages.....	69.7	49.9	88.4	30.0	87.5
1- 5.....	4.2	4.1	4.4	2.9	2.9
5- 9.....	1.5	1.6	1.7	0.5	0.5
10-14.....	1.3	1.5	1.2	0.5	0.9
15-19.....	2.7	2.6	2.9	1.9	3.1
20-24.....	4.2	4.6	3.9	1.5	5.3
25-34.....	15.9	8.2	19.0	8.1	33.6
35-44.....	77.0	38.1	100.8	27.9	121.8
45-54.....	198.8	141.0	240.7	92.7	247.9
55-64.....	381.9	361.4	420.6	174.6	354.6
65-74.....	603.1	600.6	656.6	213.8	431.0
75 and over.....	817.5	815.2	862.0	308.0	650.1

* Metropolitan Life Insurance Company—Industrial Department—mortality experience, 1911-1914.

rate for white females is 862.0—only a slight percentage in excess of the corresponding figure for males. Colored males uniformly show the lowest rates of the four classes. In the first significant age class they have a mortality of 8.1. With advancing years the difference in their favor becomes greater, so that in the last age class they exhibit a rate of only 308.0—less than half that of the next higher class. Colored females show a very high mortality in the early significant age classes. At 25 to 34 they have a rate of 33.6, almost twice that of white females, and more than four times that of white males. In the later age classes, however, this disadvantage disappears, so that

at ages 75 and over they have a mortality of only 680.1, less than that of both classes of whites.

It has often been said that cancer is a disease of the well-to-do. If our figures show anything it is that the industrial classes enjoy no advantage. The rates which I have just quoted indicate this point clearly on comparison with those for the Registration Area, which embraces all classes of the population. The rates for the various age groups of the white male industrial population uniformly exceed by 10 per cent. or more the corresponding figures for the population as a whole; the rates for the female industrial population fluctuate about the corresponding figures for the Registration Area, being sometimes a little above and sometimes a little below. To be sure, this may be due to the greater accuracy of the insurance data. Be that as it may, we can distinctly state that no large groups in the community enjoy any special immunity. This has been confirmed by an investigation which I have recently conducted into the mortality rates of the principal races of our population. I have found that there is little to justify assertions which have been made in the literature that certain of the races enjoy especial or partial immunity. The Jews, for example, have been singled out in this respect. As a matter of fact, the rate for Jews is sometimes higher than for the native-born Americans of the corresponding age periods. In 1910, for example, there was a cancer mortality of 150.0 per hundred thousand at ages 45 to 64, among the native American male population of New York State. On the other hand, the Russian-born male population—an overwhelming majority of which are Jews—had a rate of 277.5 in the same age class.

In Table 2, I have attempted to indicate the relative importance of the several forms of cancer which occur among males and females of the two races. It will be noted that among white males about half of the cancers affect the stomach or liver. About 20 per cent. more relate to other parts of the digestive system, namely, the buccal cavity, the peritoneum, the intestines or the rectum. Together over 70 per cent. of the

cancers among males are so accounted for. Among females, cancer of the genital organs and cancer of the breast are very prominent. The former was responsible for 43.1 per cent. of all the cancer deaths occurring among the colored; 15.9 per cent. in addition were due to breast cancers. Cancers of the skin are much more numerous among males than among females; the rate is extremely low for colored persons, being virtually negligible among colored females.

In general, there is clearly a larger proportion of surgically accessible cases among females than among males. Hospital statistics show that the cancers which are responsible for a large part of the female mortality

TABLE 2.—DEATHS FROM CANCER OF SPECIFIED ORGANS PER HUNDRED DEATHS FROM CANCER OF ALL FORMS, CLASSIFIED BY COLOR AND SEX *

Cancer of Specified Organs	All Persons	White Males	White Females	Colored Males	Colored Females
Cancer, all forms.....	100.0	100.0	100.0	100.0	100.0
Cancer of buccal cavity.....	3.7	9.6	1.1	7.3	1.5
Cancer of stomach and liver....	37.8	49.6	33.9	53.5	21.5
Cancer of the peritoneum, intestines and rectum.....	11.7	13.0	11.6	10.2	8.3
Cancer of the female genital organs.....	21.1	28.8	43.1
Cancer of the breast.....	9.3	0.3	12.9	1.0	15.9
Cancer of the skin.....	2.6	4.5	1.9	3.2	0.9
Cancer of other organs or of organs not specified.....	13.9	23.0	9.8	24.9	8.8

* Metropolitan Life Insurance Company—Industrial Department—mortality experience, 1911-1914.

—those of the genital organs and of the breast—are most susceptible to treatment. At Johns Hopkins Hospital, 11.1 per cent. of the operations for cancers of the female genital organs proved fatal, and only 5.5 per cent. of the cancers of the breast. We may, therefore, expect a large reduction in the female cancer mortality from organized efforts to bring cases to early treatment.

The third table presents the average ages at death of the persons who have died of cancer of the various forms. It is evident that the average age of females at death from cancer of all forms is about two and one-half years lower than that of males: 54.8 years as against 57.2 years. Among males the average age at

death from the different causes varies between 53.7 (for cancer of other organs) and 61.8 (for cancer of the breast and cancer of the skin). Among females the variation is within wider limits, the minimum age at death being 51.1 (for cancer of the female genital organs) and the maximum being 63.7 (for cancer of the skin). The age at death for cancer of the buccal cavity, cancer of the breast and cancer of other organs is higher among males than among females. There are slight differences in favor of the females, on the other hand, in connection with cancer of the stomach and liver, cancer of the peritoneum, intestines, and rectum, and cancer of the skin.

TABLE 3.—AVERAGE AGE AT DEATH FROM CANCER OF SPECIFIED ORGANS, CLASSIFIED BY SEX *

Cancer of Specified Organs	Average Ages of		
	All Persons	Males	Females
Cancer, all forms.....	55.5	57.2	54.8
Cancer of the buccal cavity.....	58.9	59.4	57.3
Cancer of the stomach and liver.....	58.3	58.3	58.4
Cancer of the peritoneum, intestines and rectum.....	56.1	55.8	56.3
Cancer of the female genital organs.....	51.1	51.1
Cancer of the breast.....	53.9	61.8	53.8
Cancer of the skin.....	62.7	61.8	63.7
Cancer of other organs or of organs not specified.....	52.9	53.7	52.1

* Metropolitan Life Insurance Company—Industrial Department—mortality experience, 1911-1914.

A consideration of the average ages at death is important, because they indicate the loss to the community that is occasioned by cancer deaths. At 55 the expectation of life at the present time in New York City is over fourteen years; at 60 it is almost twelve years. If, for the sake of argument, we assume an average loss to the community of fifteen years of life for each cancer death, it will at once be seen how huge is the loss to the community as a whole. At the present time a conservative estimate places the total number of cancer deaths in the United States at 80,000 a year. This means a loss to the community of an aggregate of 1,200,000 years of life. It is futile to consider the monetary value of this loss; as I have

already pointed out, the interest of the community in this disease is not primarily economic. Our great desire is to allay the suffering of the many thousands of persons who annually succumb, and, if possible, to extend to persons of middle life and early old age a few additional years of peaceful enjoyment. This will be a gain to civilization of no mean value. We shall have accomplished much if we assure those who are just entering the portals of old age that the declining years of their life will not be beset by the gaunt specter of cancer. That the happiness of thousands of families will be preserved, and that thousands of individuals will be spared unbearable pain, surely means more to the community than can be estimated in terms of dollars and cents.

To accomplish this end, two lines of effort are clearly indicated. The first is immediate and undeniable. It is to reduce, by the best means at our disposal, the suffering and premature death of cancer patients. At the present time the greatest promise of success is held out by the surgeon. The average duration of the disease, from the first symptom to death, varies considerably with the form and location of the cancer; but, taken together for all forms of cancer, the period is about two years. The records of surgical interference, especially those of the Mayo Clinic, indicate a marked extension of life of the patients after operation. While no absolute figure may be quoted, there is an indication that an expansion of life of about three to five years is accomplished for about half of the cases. The extent of the additional years depends on the timeliness of the operation, the failures being the advanced cases. If, therefore, it can be arranged that early diagnosis be followed by immediate operation, the average duration of life of cancer patients can be appreciably prolonged. If an average of five years could be added to these lives, this would be equivalent to a reduction of more than one third of the total loss. This is clearly the community's immediate program.

The second line of effort lies in investigating into the basic facts of cancer—the etiology of the disease, its method of dissemination, the problem of inheritance, and, finally, the measures of relief. This is the field of the pathologist and the surgeon, rather than of the statistician, the sociologist, or the lay investigator. I wish to devote brief attention, however, to a contribution to this effort which is being made by the life insurance companies, and which promises to cast valuable light on the entire problem.

At the request of the American Society for the Control of Cancer, a committee¹ representing the largest life insurance companies has made all the necessary preparations to carry on a special study of the life insurance returns for two forms of cancer which are readily diagnosed, namely, cancer of the buccal cavity and cancer of the breast. Special forms have been drawn up for this purpose, covering the following points:

INQUIRY BLANK FOR THE STUDY OF CANCER OF THE
BREAST (OR OF THE BUCCAL CAVITY)

Name of patient; address; department; claim number.

Personal and social facts about deceased: color; sex; nearest age at death; place of birth; birthplace of deceased's mother (if readily ascertainable). Was deceased single, married, widowed or divorced?

Occupation: general nature of industry or business; trade or particular kind of work.

Family history of deceased: Have other members of deceased's immediate family died from cancer of the breast (or buccal cancer)? Have other members of deceased's immediate family died from other forms of cancer? Have other members of deceased's immediate family had and survived any form of cancer? If so, state relationship; also give type of cancer.

History of breast lesions: Any history of blow, wound, irritation or other injury to breast? Please specify. Type of mammary gland (large, small, adipose?). Lactation: first and last date of lactation if possible. Any difficulty with lactation? Any history of mastitis? Habits: Was deceased a vegetarian? A heavy meat eater?

History of buccal lesions: Any history of irritation from teeth? Any history of other irritation or injury to buccal cavity? Any history of syphilis? Leukoplakia? Habits: Did deceased use alcoholic beverages? Abstainer? Moderate user? Excessive user? Did deceased use tobacco? Pipe? Cigar? Cigaret? Chew? Was deceased a vegetarian? A heavy meat eater?

1. Mr. Arthur Hunter, New York Life, chairman; Dr. F. C. Wells, Equitable Life; Dr. W. A. Jaquith, Prudential; Dr. Brandreth Symonds, Mutual Life, and Louis I. Dublin, Metropolitan Life.

Cancer history: Date when first symptoms were observed. Type of tumor when first observed. Location of initial tumor. Metastasis to —. Type of tumor at time of death. Location of tumor at time of death.

Cancer treatment: Give approximate dates, kind of treatment and results: (a) medical treatment; (b) surgical treatment; (c) other treatment (Roentgen-ray, radium or other).

Other diseases or conditions intercurrent with cancer.

Pathologic report: Gross appearance of tumor (if of the breast, was the skin or muscle, or both involved?). Microscopic report (if of the breast, give details of structure of growth).

Necropsy report: Please give findings.

Any other information of value.

Date, and signature of physician.

The plan is to send one of these blanks to each of the physicians who sign the death certificates on the claim papers returned to the life insurance companies, and to ask for more information with reference to the case. By these means the companies hope to obtain all the important facts with reference to the history of the deceased and of his or her family. The history of the lesion is gone into fully, to determine whether there has been any blow, wound or irritation; the cancer history is listed, as well as the nature of the treatment. Record of necropsy or of pathologist's report is called for. We hope to receive this information in a large proportion of cases, and at the end of a requisite period the entire material will be analyzed as a unit and a report will be issued. Thus we trust that we shall be able to add materially to the amount of exact knowledge with reference to cancer.

The insurance companies, as well as the American Society for the Control of Cancer, hope and trust that these forms will receive the careful attention of specialists and general practitioners, and the enthusiastic cooperation of the medical profession is confidently counted on as one of the essential instruments in this investigation.